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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,614	08/19/2003	Motoya Iwasaki	P15467-A	3755

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EXAMINER
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MUI, GARY

ART UNIT	PAPER NUMBER
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2616

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/03/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/642,614	<b>Applicant(s)</b> IWASAKI, MOTOYA	
	<b>Examiner</b> Gary Mui	<b>Art Unit</b> 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

2. Figures 5, 6, 8 and 9 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
3. In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

*Specification*

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because the abstract is not in narrative form; the abstract exceeds the word range of 50 – 150 words. Correction is required. See MPEP § 608.01(b).

*Claim Objections*

6. Claims 3 – 5 are objected to because of the following informalities:

For claim 3 line 2, the occurrence of "a window function" seems to refer back to "a window function" previously recited in claim 1 line 14, if this is true, it is suggested to the applicant to change "a window function" to --the window function--. Similar problem exists for claim 4.

Claim 5 is objected to because it depends on an objected claim.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. Claims 1 – 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For claim 1 line 12, the occurrence of “an amplitude value” is vague and indefinite because it is not known if it is referring to an amplitude value previously recited or a new amplitude value.

Claims 2 – 6 are rejected to because they depend on a rejected claim.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claim 7 is rejected under 35 U.S.C. 102(e) as being anticipated by Hunton (US 7,170,952 B2).

For claim 7, Hunton teaches a plurality of filters which pass predetermined band components containing input signals (see figure 5, box 20); a plurality of first frequency converters which convert the signals passing through the filters into signals with different frequencies for the respective channels (see figure 5, box 70; a carrier combining unit which combines the output signals from the first frequency converters (see figure 5, box 80); an amplitude limiting circuit

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which limits an amplitude of an output signal from the carrier combining unit (see figure 5, box 110); a D/A converter which converts an output signal from the amplitude limiting circuit into an analog signal (see figure 5, box 30); a second frequency converter which converts the analog signal into an RF signal (see figure 5, box 40); and a transmission power amplifier which amplifies the RF signal to power necessary for transmission (see figure 5, box 50, see column 5 lines 31 – 48).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 1 – 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Long et al. (US 5,710,990) in view of Birchler (US 5,287,387).

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For claim 1, Long et al. teaches an amplitude converter which calculates an amplitude value of an input signal; a peak detector which detects, peak time when a maximum amplitude value appears and an amplitude value at the peak time as a peak value (see column 3 lines 23 – 25, see figure 1 box 44); a delay circuit which delays the input signal such that the peak time output from the peak detector coincides (see column 2 lines 8 – 18, see figure 1 box 32, 34). Long et al. fails to teach a determination unit which detects, as a detection interval, an interval in which the amplitude value exceeds a threshold; on the basis of a preset threshold and the amplitude value of the input signal; a window filter which generates a window function for limiting the amplitude value to a value not more than the threshold by using the peak value output from the peak detector; and a multiplier which multiplies an output signal from the delay circuit by the window function. Birchler from the same field of endeavor teaches an effective PAR (peak-to-average ratio) control without the generation of significant splatter. The method involves a windowed-clipping algorithm that provides a low-splatter mechanism of reducing signal peaks by applying an attenuating window, such as an inverse Hanning window, to a limited number of signal samples centered at the peak of a signal above a clip threshold. A timing diagram of an input signal having a local maximum at time  $T_{max}$  above a predetermined clip threshold. Because any signal value above the clip threshold causes a power amplifier to operate in its non-linear region, resulting in splatter, the maximum signal input to the power amplifier is clipped to the clip threshold (see column 1 line 65 – column 2 line 11) and the multipliers applying the attenuation window to the input signal  $t(n)$  resulting in the output signal  $t_w(n)$ , which is at or below  $T_{clip}$  (see column 3 lines 29 – 31). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was

made to add the determination unit, window filter and multiplier as taught by Birchler into the peak-to-average power adjuster as taught by Long et al. The motivation for doing this is that by restricting when to search for the peak into a certain interval the whole circuit will be more efficient.

For claim 2, Long et al. teaches all of the claimed subject matter and an amplitude comparing section which compares the preset threshold with the amplitude value of the input signal (see column 3 lines 35 – 38). Long et al. fails to teach an interval detecting section which detects an interval in which the amplitude value exceeds the threshold. Birchler from the same field of endeavor teaches that there are two modes of operation of the windowed-clipping algorithm, variable and constant. If  $|p(n)|^2$  is greater than  $T_{clp}$ , but less than  $T_{sat}$  (criterion 1), and is determined to be a local maximum (criterion 2), a variable window calculation is triggered. Thus, the two conditions that trigger a variable window calculation are: 1)  $T_{sat} < |p(n)|^2 < T_{clp}$  and 2)  $|p(n)|^2 \geq |p(n-1)|^2$  and  $|p(n)|^2 \geq |p(n+1)|^2$ . Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to the determination unit with an interval detecting section as taught by Birchler into the peak-to-average power adjuster as taught by Long et al. The motivation for doing this is that by restricting when to search for the peak into a certain interval the whole circuit will be more efficient.

For claim 3 and 4, Long et al. teaches all of the claimed subject matter and a delay circuit delays the input signal such that the peak time coincides with the center of the correction interval (see column 3 lines 8 – 18, see figure 1 box 32, 34). Long et al. fails to teach the window filter outputs a window function which exhibits a value of 1 before and after a preset



correction interval longer than the detection interval and makes a value at the center of the correction interval proportional to the reciprocal of the peak value and the window filter outputs a window function exhibiting a value which is 1 until the peak value and becomes not more than a value (threshold/peak value) at the center of the correction interval after the peak time. Birchler from the same field of endeavor teaches the two conditions that trigger a variable window calculation are: 1)  $T_{sat} < |p(n)|^2 < T_{clp}$  and 2)  $|p(n)|^2 \geq |p(n-1)|^2$  and  $|p(n)|^2 \geq |p(n+1)|^2$  and from figure 2 we can see that the window value is 1 before and after the correction interval.

For claim 6, Long et al. teaches a threshold input section which inputs a threshold to the determination unit (see figure 1 box 56, threshold detector, the threshold found here will be feed to the determination unit of Birchler).

### ***Claim Rejections - 35 USC § 103***

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hunton as applied to claim 7 above, and further in view of Long et al. and Birchler.

For claim 8, Hunton teaches all of the claimed subject matter with the exception of an amplitude converter which calculates an amplitude value of an input signal, a determination unit which detects, as a detection interval, an interval in which the amplitude value exceeds a threshold, on the basis of a preset threshold and the amplitude value of the input signal, a peak detector which detects, in the detection interval, peak time when a maximum amplitude value appears and an amplitude value at the peak time as a peak value, a window filter which generates a window function for limiting the amplitude value to a value not more than the

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threshold by using the peak value output from the peak detector, a delay circuit which delays the input signal such that the peak time output from the peak detector coincides with time when the window function output from the window filter exhibits a minimum value, and a multiplier which multiplies an output signal from the delay circuit by the window function.

Long et al. from the same field of endeavor teaches an amplitude converter which calculates an amplitude value of an input signal; a peak detector which detects, peak time when a maximum amplitude value appears and an amplitude value at the peak time as a peak value (see column 3 lines 23 – 25, see figure 1 box 44); a delay circuit which delays the input signal such that the peak time output from the peak detector coincides (see column 2 lines 8 – 18, see figure 1 box 32, 34). Long et al. fails to teach a determination unit which detects, as a detection interval, an interval in which the amplitude value exceeds a threshold, on the basis of a preset threshold and the amplitude value of the input signal; a window filter which generates a window function for limiting the amplitude value to a value not more than the threshold by using the peak value output from the peak detector; and a multiplier which multiplies an output signal from the delay circuit by the window function. Birchler also from the same field of endeavor teaches that an effective PAR (peak-to-average ratio) control without the generation of significant splatter. The method involves a windowed-clipping algorithm that provides a low-splatter mechanism of reducing signal peaks by applying an attenuating window, such as an inverse Hanning window, to a limited number of signal samples centered at the peak of a signal above a clip threshold. A timing diagram of an input signal having a local maximum at time  $T_{max}$  above a predetermined clip threshold. Because any signal value above the clip threshold causes a power amplifier to operate in its non-linear

region, resulting in splatter, the maximum signal input to the power amplifier is clipped to the clip threshold (see column 1 line 65 – column 2 line 11) and the multipliers applying the attenuation window to the input signal  $t(n)$  resulting in the output signal  $t_w(n)$ , which is at or below  $T_{clp}$  (see column 3 lines 29 –31). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the amplitude limiting circuit as taught by Long et al. and Birchler in place of the signal – peak suppression unit as taught by Hunton. The motivation for doing this is that with more parameters to limit the signal we can have less nonlinear distortions.

#### *Allowable Subject Matter*

14. Claim 5 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art fails to teach alone or in combination the window function  $w(t)$  (claim 5 line 6) produced by the window filter.

#### *Conclusion*

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sato (US 5,751,705), Uta et al. (US 6,144,694), McGowan et al. (US 6,236,864 B1), Hedberg et al. (US 6,266,320 B1), Frank et al. (US 6,636,555 B1), Hongo et al. (US 6,931,239 B2), and Huton (US 7,095,798 B2) are cited to show an Amplitude limiting circuit and CDMA communication apparatus.

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16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary Mui whose telephone number is (571) 270-1420. The examiner can normally be reached on Mon. - Thurs. 9 - 3 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GM

03.30.2007

  
RICKY Q. NGO  
SUPERVISORY PATENT EXAMINER